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PTO/SB/21 (05-03)

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| <b>TRANSMITTAL FORM</b><br><br>(to be used for all correspondence after initial filing) | Application Number   | 09/741,684             |          |
|   | Filing Date          | December 18, 2000      |          |
|   | First Named Inventor | Xm WONG et al.         |          |
|   | Art Unit             | 2652                   |          |
|   | Examiner Name        | Brian E. MILLER        |          |
| Total Number of Pages in This Submission  | 34                   | Attorney Docket Number | 12553/29 |

| ENCLOSURES (Check all that apply)  |   |   |
|--|---|---|
| <input checked="" type="checkbox"/> Fee Transmittal Form                     | <input type="checkbox"/> Drawing(s)   | <input type="checkbox"/> After Allowance communication to Group                                       |
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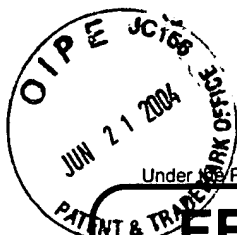
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| SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT |                                      |
|--|--------------------------------------|
| Firm or Individual name                    | Stephen T. Neal<br>(Reg. No. 47,815) |
| Signature                                  | <i>Stephen T. Neal</i>               |
| Date                                       | June 15, 2004                        |

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| I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below. <b>M/S: APPEAL BRIEF - PATENTS</b> |                      |      |               |
| Typed or printed name  | Barbara Vance        |      |               |
| Signature  | <i>Barbara Vance</i> | Date | June 15, 2004 |

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PTO/SB/17 (10-03)  
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# FEE TRANSMITTAL for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$)**330.00**

## Complete if Known

Application Number **09/741,684**  
Filing Date **December 18, 2000**  
First Named Inventor **Xm WONG et al.**  
Examiner Name **Brian E. MILLER**  
Art Unit **2652**  
Attorney Docket No. **12553/29**

## METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit  
Account  
Number

**11-0600**

Deposit  
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Name

**Kenyon & Kenyon**

The Director is authorized to: (check all that apply)

☒ Charge fee(s) indicated below ☒ Credit any overpayments

☒ Charge any additional fee(s) or any underpayment of fee(s)

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## FEE CALCULATION

### 1. BASIC FILING FEE

| Large Entity |          | Small Entity |          | Fee Description        | Fee Paid      |
|--------------|----------|--------------|----------|------------------------|---------------|
| Fee Code     | Fee (\$) | Fee Code     | Fee (\$) |                        |               |
| 1001         | 770      | 2001         | 385      | Utility filing fee     |               |
| 1002         | 340      | 2002         | 170      | Design filing fee      |               |
| 1003         | 530      | 2003         | 265      | Plant filing fee       |               |
| 1004         | 770      | 2004         | 385      | Reissue filing fee     |               |
| 1005         | 160      | 2005         | 80       | Provisional filing fee |               |
| SUBTOTAL (1) |          |              |          |                        | (\$) <b>0</b> |

### 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

| Total Claims |                    | Extra Claims |        | Fee from below |   | Fee Paid |
|--------------|--------------------|--------------|--------|----------------|---|----------|
| Independent  | Multiple Dependent | -20** =      | -3** = | X              | X |          |
|              |                    |              |        |                |   |          |
|              |                    |              |        |                |   |          |
|              |                    |              |        |                |   |          |

| Large Entity |          | Small Entity |          | Fee Description  |
|--------------|----------|--------------|----------|--|
| Fee Code     | Fee (\$) | Fee Code     | Fee (\$) |  |
| 1202         | 18       | 2202         | 9        | Claims in excess of 20                                     |
| 1201         | 86       | 2201         | 43       | Independent claims in excess of 3                          |
| 1203         | 290      | 2203         | 145      | Multiple dependent claim, if not paid                      |
| 1204         | 86       | 2204         | 43       | ** Reissue independent claims over original patent         |
| 1205         | 18       | 2205         | 9        | ** Reissue claims in excess of 20 and over original patent |

SUBTOTAL (2) (\$)**0**

\*\*or number previously paid, if greater; For Reissues, see above

## FEE CALCULATION (continued)

### 3. ADDITIONAL FEES

| Large Entity |          | Small Entity |          | Fee Description  | Fee Paid      |
|--------------|----------|--------------|----------|--|---------------|
| Fee Code     | Fee (\$) | Fee Code     | Fee (\$) |  |               |
| 1051         | 130      | 2051         | 65       | Surcharge - late filing fee or oath  |               |
| 1052         | 50       | 2052         | 25       | Surcharge - late provisional filing fee or cover sheet                     |               |
| 1053         | 130      | 1053         | 130      | Non-English specification  |               |
| 1812         | 2,520    | 1812         | 2,520    | For filing a request for ex parte reexamination                            |               |
| 1804         | 920*     | 1804         | 920*     | Requesting publication of SIR prior to Examiner action                     |               |
| 1805         | 1,840*   | 1805         | 1,840*   | Requesting publication of SIR after Examiner action                        |               |
| 1251         | 110      | 2251         | 55       | Extension for reply within first month                                     |               |
| 1252         | 420      | 2252         | 210      | Extension for reply within second month                                    |               |
| 1253         | 950      | 2253         | 475      | Extension for reply within third month                                     |               |
| 1254         | 1,480    | 2254         | 740      | Extension for reply within fourth month                                    |               |
| 1255         | 2,010    | 2255         | 1,005    | Extension for reply within fifth month                                     |               |
| 1401         | 330      | 2401         | 165      | Notice of Appeal   |               |
| 1402         | 330      | 2402         | 165      | Filing a brief in support of an appeal                                     | <b>330.00</b> |
| 1403         | 290      | 2403         | 145      | Request for oral hearing   |               |
| 1451         | 1,510    | 1451         | 1,510    | Petition to institute a public use proceeding                              |               |
| 1452         | 110      | 2452         | 55       | Petition to revive - unavoidable   |               |
| 1453         | 1,330    | 2453         | 665      | Petition to revive - unintentional   |               |
| 1501         | 1,330    | 2501         | 665      | Utility issue fee (or reissue)   |               |
| 1502         | 480      | 2502         | 240      | Design issue fee   |               |
| 1503         | 640      | 2503         | 320      | Plant issue fee  |               |
| 1460         | 130      | 1460         | 130      | Petitions to the Commissioner  |               |
| 1807         | 50       | 1807         | 50       | Processing fee under 37 CFR 1.17(q)  |               |
| 1806         | 180      | 1806         | 180      | Submission of Information Disclosure Stmt                                  |               |
| 8021         | 40       | 8021         | 40       | Recording each patent assignment per property (times number of properties) |               |
| 1809         | 770      | 2809         | 385      | Filing a submission after final rejection (37 CFR 1.129(a))                |               |
| 1810         | 770      | 2810         | 385      | For each additional invention to be examined (37 CFR 1.129(b))             |               |
| 1801         | 770      | 2801         | 385      | Request for Continued Examination (RCE)                                    |               |
| 1802         | 900      | 1802         | 900      | Request for expedited examination of a design application                  |               |

Other fee (specify) \_\_\_\_\_

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$)**330.00**

## SUBMITTED BY

(Complete if applicable)

Name (Print/Type) **Stephen T. Neal** Registration No. **47,815** Telephone **(408) 975-7500**  
Signature *Stephen T. Neal* Date **June 15, 2004**

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Patent



Attorney Docket No.: 12553/29

#24  
mg  
7/2/04

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANTS : Xm WONG et al.  
SERIAL NO. : 09/741,684  
FILED : December 18, 2000  
FOR : BONDING PAD OF SUSPENSION CIRCUIT  
GROUP ART UNIT : 2652  
EXAMINER : Brian E. MILLER

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| Dated: <u>June 15, 2004</u>  | <u>Barbara Vance</u><br>Signature<br>Barbara Vance |

**ATTENTION: Board of Patent Appeals and Interferences**

**APPELLANT'S BRIEF**

Dear Sir:

This brief is in furtherance of the Notice of Appeal, filed in this case on April 12, 2004.

06/23/2004 CNGUYEN 00000095 110600 09741684

01 FC:1402 330.00 DA

**1. REAL PARTY IN INTEREST**

The real party in interest in this matter is SAE Magnetics (H.K.) Ltd. (Recorded April 16, 2001; Reel/Frame 011915/0933).

**2. RELATED APPEALS AND INTERFERENCES**

There are no related appeals.

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**JUN 24 2004**

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**3. STATUS OF THE CLAIMS**

Claims 7-12 are pending in this application. Claims 7-11 are rejected under 35 U.S.C. §102(b). Claim 12 is rejected under 35 U.S.C. §103(a). This appeal is an appeal from the rejection of claims 7-12.

**4. STATUS OF AMENDMENTS**

Claims 8-12 were amended in the previous response to correct typographical errors. The Examiner did not specify in his advisory action whether this amendment was entered. These amendments are reflected in the claims attached in the appendix.

**5. SUMMARY OF THE INVENTION**

The present invention pertains to a suspension circuit electrical bonding pad for electrically and mechanically connecting process for the magnetic recording head. The bonding pad serves as a joint material as well as the joint interface. Thus there is no need to apply the conductive material in between the bonding pads and magnetic recording head terminals, consequently reducing the process leading time and simplifying the magnetic recording head

assemble process. *See* Abstract.

Figure 3 shows an assembly method. A metal pad is provided on the suspension, and then a bonding substance is applied onto the metal pad of the suspension circuit by means of a solder plating or solder paste printing process. Next, a heat treatment is applied to the bonding substance so that it forms a sphere or another desired shape. Finally, during the heat treatment, connection is completed between the suspension and the slider pad. *See* p. 4, line 1-10.

## **6. ISSUES**

A. Are claims 7-11 anticipated by Albrecht et al., U.S. Patent No. 5,821,494 (hereinafter "Albrecht")?

B. Are claims 7-11 anticipated by Ainslie et al., U.S. Patent No. 4,761,699 (hereinafter "Ainslie")?

C. Is claim 12 rendered obvious under Albrecht?

D. Is claim 12 rendered obvious under Ainslie?

## **7. GROUPING OF CLAIMS**

The claims may be grouped as follows. A separate basis of patentability exists for each group.

A. Claims 7-11.

B. Claim 12.

The claims in these groups do not stand or fall together unless so indicated below in the argument.

## 8. ARGUMENT

### A. Claims 7-11 are not anticipated by Albrecht.

Independent claim 7 of the present invention describes a suspension with a suspension bonding pad to electrically bond a magnetic head terminal. The bonding pad is a metal pad having a bonding substance applied as a surface finishing material. The surface finishing material is heat treated prior to bonding to a surface. A slider bonding pad initially without bonding substance is coupled to the suspension such that the bonding substance on the suspension bonding pad is reflowed so as to electrically couple the suspension bonding pad and the slider bonding pad. Claims 8-11 depend from claim 7.

Appellants respectfully submit that Albrecht does not teach or suggest a slider bonding pad initially without bonding substance coupled to said suspension such that the bonding substance on said suspension bonding pad is reflowed so as to electrically couple the suspension bonding pad and the slider bonding pad, as cited in claim 7. Albrecht discloses making a solder connection between a slider pad and a suspension pad forming a solder bump on the solder pad at the slider level to affix the slider to the suspension (*See Abstract*).

The Examiner states, in regards to claim 7, that Albrecht discloses the invention as claimed. Albrecht states:

In FIG. 10A the slider 42 is affixed to the suspension 44 as described hereinabove. This affixing positions the tail 100 over and adjacent the flattened solder bump 116. Upon reflow the flattened solder bump 116 has an expected reconfiguration due to surface tension which will form a substantially spherical shape as shown by the phantom line at 118. The tail 100 projects within this expected expansion which will cause the solder bumps 94 and 116 to effectively unite and cause an efficient reflow therebetween. As shown in FIG. 10A the solder bumps 94 and 116 are reflowed by the laser beam under an inert gas atmosphere like nitrogen gas which produces the solder connection 60 between the slider pad 62 to the suspension pad 64, as shown in FIG. 10B.

(*See Albrecht*, col. 7, line 66 – col. 8, line 11).

In other words, a solder bump is placed on both the slider pad and the suspension pad, at which point the two bumps unite to create the bond. The slider bonding pad initially has a bonding substance.

While the patentability of a “product by process” claim must be determined by the product itself and not the actual process, the process in this instance will affect the state of the product. The gravitational pull on the solder reflow and initial placement of the solder will affect the shape of the solder bond.

In summary, it has been demonstrated that the Albrecht reference does not teach or suggest the recited claim combination. Anticipation under 35 U.S.C. §102(b) requires that the references disclose the claimed combination without reference to the application. Accordingly, a rejection of these claims under 35 U.S.C. §102(b) is improper. In view of the above, Appellants respectfully submit that the rejection of claims 7-12 should be reversed.

**B. Claims 7-11 are not anticipated by Ainslie.**

Appellants respectfully submit that Ainslie does not teach or suggest a slider bonding pad initially without bonding substance coupled to said suspension such that the bonding substance on said suspension bonding pad is reflowed so as to electrically couple the suspension bonding pad and the slider bonding pad, as cited in claim 7. Ainslie discloses mechanically attaching a slider to the suspension with reflowed solder balls. A pattern of solder contact pads is formed on the back side of the slider and a similar pattern of solder-wettable regions is formed on the suspension (*See Abstract*).

The Examiner states, in regards to claim 7, that Ainslie discloses the invention as claimed. Ainslie states:

Referring now to FIG. 5, solder balls 80 are formed on the solder-wettable regions 60 and solder balls 82 are formed on solder-wettable regions 61, 63. The solder balls are preferably formed by first tightly securing a mask with circular openings over the suspension, the openings being aligned with the etched-away portions of layer 48. A solder paste is then spread over the mask and forced through the openings. The mask is removed and the solder heated to reflow as solder balls 80, 82. The solder balls are then adhered to the regions 60, 61 and 63 of the patterned conductive layer 44. The solder balls 80, 82 may also be formed on the suspension by evaporating solder through openings in a mask placed over insulating layer 48, removing the mask and thereafter heating the evaporated solder to cause the solder to reflow as solder balls 80, 82.

(See Ainslie, col. 6, lines 53-68).

In other words, the solder is applied to the pad 41 on the slider and the opening 63 on the suspension. Further, Ainslie states:

Referring again to FIG. 3, the solder-wettable regions on suspension 40 are formed by removing selected portions of the polyimide insulating layer 48, which thereby exposes the *circular openings* 60, 61 on large area portions 52, 54 and the circular openings 63 on lead terminations 47.

(See Ainslie, col. 4, lines 18-23) (Emphasis Added).

In other words, the suspension does not have a structure such as a pad, it has the absence of a structure in the form of circular openings.

In summary, it has been demonstrated that the Ainslie reference does not teach or suggest the recited claim combination. Anticipation under 35 U.S.C. §102(b) requires that the references disclose the claimed combination without reference to the application. Accordingly, a rejection of these claims under 35 U.S.C. §102(b) is improper. In view of the above, Appellants respectfully submit that the rejection of claims 7-12 should be reversed.

**C. Claim 12 is not rendered obvious under Albrecht.**

Claim 12 depends from claim 7. Appellants respectfully submit that Albrecht does not teach or suggest a slider bonding pad initially without bonding substance coupled to said



suspension such that the bonding substance on said suspension bonding pad is reflowed so as to electrically coupled the suspension bonding pad and the slider bonding pad, as cited in claim 7. As stated above, Albrecht fails to disclose, teach, or suggest this limitation.

In summary, it has been demonstrated that the Albrecht reference does not teach or suggest the recited claim combination. Obviousness under 35 U.S.C. §103(a) requires that the references disclose the claimed combination without reference to the application. Accordingly, a rejection of these claims under 35 U.S.C. §103(a) is improper. In view of the above, Appellants respectfully submit that the rejection of claim 12 should be reversed.

**D. Claim 12 is not rendered obvious under Ainslie.**

Claim 12 depends from claim 7. Appellants respectfully submit that Ainslie does not teach or suggest a slider bonding pad initially without bonding substance coupled to said suspension such that the bonding substance on said suspension bonding pad is reflowed so as to electrically coupled the suspension bonding pad and the slider bonding pad, as cited in claim 7. As stated above, Ainslie fails to disclose, teach, or suggest this limitation.

In summary, it has been demonstrated that the Ainslie reference does not teach or suggest the recited claim combination. Obviousness under 35 U.S.C. §103(a) requires that the references disclose the claimed combination without reference to the application. Accordingly, a rejection of these claims under 35 U.S.C. §103(a) is improper. In view of the above, Appellants respectfully submit that the rejection of claim 12 should be reversed.


Appellants therefore respectfully request that the Board of Patent Appeals and Interferences reverse the Examiner's decision rejecting claims 7-12, and direct the Examiner to pass the case to issue.

The Examiner is hereby authorized to charge the appeal brief fee of **\$330.00** and any additional fees, which may be necessary for consideration of this paper to Kenyon & Kenyon Deposit Account No. **11-0600**.

Respectfully submitted,

KENYON & KENYON

Date: June 15, 2004

By:   
Stephen Neal  
(Reg. No. 47,815)  
Attorneys for Intel Corporation

KENYON & KENYON  
333 West San Carlos St., Suite 600  
San Jose, CA 95110

Telephone: (408) 975-7500  
Facsimile: (408) 975-7501

## APPENDIX

(Brief of Appellant Xm Wong et al.  
U.S. Patent Application Serial No. 09/741,684)

### CLAIMS ON APPEAL

1-6. (Cancelled)

7. (Previously Amended) A suspension comprising:

a suspension bonding pad for electrically bonding a magnetic head terminal, wherein said bonding pad includes a metal pad having a bonding substance applied as a surface finishing material, the surface finishing material being heat treated prior to bonding to a surface; and

a slider bonding pad initially without bonding substance coupled to said suspension such that the bonding substance on said suspension bonding pad is reflowed so as to electrically couple the suspension bonding pad and the slider bonding pad.

8. (Currently Amended) The suspension as claimed ~~claim~~ in claim 7, wherein said bonding substance is solder.

9. (Currently Amended) The suspension as claimed ~~claim~~ in claim 7, wherein said bonding substance is a conductive polymer.

10. (Currently Amended) The suspension as claimed ~~claim~~ in claim 7, wherein said bonding substance is an adhesive.

11. (Currently Amended) The suspension as claimed ~~claim~~ in claim 7, wherein said bonding substance is a film.

12. (Currently Amended) The suspension as claimed ~~claim~~ in claim 8, wherein a bump height for the solder is approximately 50-300  $\mu\text{m}$ , and a bump diameter for the solder is less than 180  $\mu\text{m}$ .

13-18. (Cancelled)